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## PATENT ABSTRACTS OF JAPAN

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(21) Application number: **07282741**(22) Date of filing: **31.10.1995**(71) Applicant: **KYOCERA CORP**

(72) Inventor: **NAKAGAWA TOMOYUKI**  
**NISHIJIMA SHIGEKI**

(54) **ARTIFICIAL INTERVERTEBRAL SPACER**

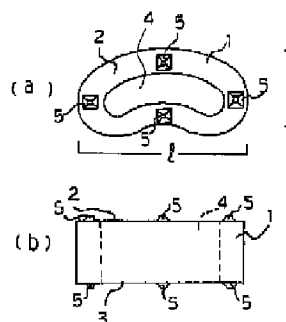
## (57) Abstract:

**PROBLEM TO BE SOLVED:** To prevent the disappearance of reduction diameter and the occurrence of pain caused by an artificial joint by almost arcuately forming an intervertebral spacer in plane view and providing a through hole communicating upper and lower surfaces in contact with upper and lower vertebral bodies.

**SOLUTION:** An artificial intervertebral spacer 1 is almost arcuately formed in plane view and has a through hole 4 which communicates an upper surface 2 and a lower surface 3 and is sized enough for being filled with the small piece of self-bone. Then, plural spikes 5 are respectively provided on the respective upper and lower surfaces of the spacer 1. Thus, the almost full width from side to side on the left and right intervertebral sides can be covered, the width from front to

back can be covered almost by half as well, and instability (such as shaking) caused by the difference of left and right vertebral bodies can be avoided by using this spacer together with the self-bone. Thus, synostosis speedily occurs and the inflection of bacretia is not generated. Besides, the discrimination of synostosis in a side surface X-ray radiographic image is facilitated.

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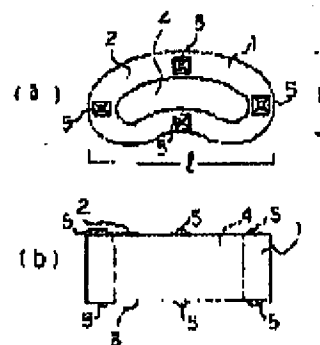
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CLAIMS

[Claim(s)]

[Claim 1] The spacer between artificial \*\* which comes to have the through tube which opens for free passage the vertical face-to-face ones which is the spacer which inserts in with the private bone of private extraction between the bones which excised a part of spine, and was patched up, and touches an up-and-down centrum while carrying out a \*\*\* form by plane view.

[Claim 2] The spacer between artificial \*\* according to claim 1 which comes to form two or more spikes for immobilization in the vertical side which touches an up-and-down centrum.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] This invention is a prosthetic dentistry member used in an orthopedics field, and relates to the spacer between artificial \*\* which inserts in with the private bone of private extraction between the bones which excised a part of spine destroyed by diseases, such as osteoncus and a herniated disk, or a traffic accident, disaster, etc., and was patched up.

[0002]

[Description of the Prior Art] The perimeter of a cancellous bone is in the spine in the body as \*\*\* from the structure in which the centrum covered by the cortical bone and the intervertebral disk which consists of an elasticity bone were piled up by turns.

[0003] The intervertebral disk was removed in [ in / the spine of such the body ] the therapy of diseases, such as a herniated disk, and that an opening in the meantime should be held, centra were connected, and since it fixes, it has used combining a

private bone, a spacer, or both.

[0004] There was a thing using super-polymeric materials etc. so that it might be indicated by the thing which consisted of alumina ceramics so that it might be indicated by JP,63-30057,Y as such a spacer or the thing which consisted of metallic materials so that it might be indicated by JP,64-76851,A, and JP,6-285099,A.

[0005]

[Description of the Prior Art] Since crushing of a private bone was produced when a private bone was used among the above-mentioned conventional techniques, the pain by disappearance and pseudoarticulation of the diameter of the reduction often arose, and was not able to enforce to an osteoporosis union patient by elderly people.

[0006] On the other hand, since the centrum of the upper and lower sides between the \*\* concerned moved by the comparatively big degree of freedom relatively when ingredients with elasticity, such as a super-polymeric-materials metallurgy group, were used if it was in some which permute and patch up an intervertebral disk with a spacer simple substance as said spacer, there was a possibility that bacteria might advance into the minute tooth space generated by such motion, and infection might start.

[0007] Moreover, although there was the approach of installing the spacer of \*\* length in the center section between \*\* by the back penetration interbody pexis and the so-called PLIF-Cloward method to a lumbar part discopathy etc. as a technique which uses said private bone and spacer together, and embedding a private bone to the right and left There was a possibility that the configuration of a centrum might not necessarily cause trouble to the synostosis for the instability (totter etc.) by not a bilateral symmetry form but the laterality of a centrum, and the trouble of being difficult also had the judgment of the synostosis in a side-face roentgenography image with the above-mentioned spacer further.

[0008]

[Objects of the Invention] Therefore, the pain by disappearance and pseudoarticulation of the diameter of the reduction is not caused, and the synostosis becomes good, and this invention does not cause infection, either, but it is safe and aims at offering the spacer between \*\* with the easy judgment of the synostosis in a side-face roentgenography image.

[0009]

[Means for Solving the Problem] In order to take large \*\*\*\* of a private bone that this invention should install the spacer between \*\* ahead between \*\*, and it should use together with a private bone in order to solve said conventional technique, while using the configuration as the \*\*\*\* form by plane view, the through tube which opens for free passage the vertical face-to-face one which touches an up-and-down centrum was prepared.

[0010]

[Function] The centrum spacer which forms a \*\*\*\* form by the plane view of this invention is installed ahead between \*\* like the above, by Kami who secured certainly the tooth space for putting a private bone into the center section and back between \*\*, a private bone is stuffed into this tooth space, and a natural intervertebral disk is permuted. Moreover, a spur plate is used together to the instability by front retroflexion movement, and relative movement of the centrum of the upper and lower sides between the \*\* concerned is restricted.

[0011] Since the centrum spacer of this invention forms a \*\*\*\* form by plane view, the abbreviation right-and-left full of right and left between \*\* can be covered, and one half extent can also cover order width of face, and the instability (totter etc.) by the laterality of a centrum can be avoided according to concomitant use with a private bone. Therefore, the synostosis happens at an early stage, and bacterial infection is not generated.

[0012] Moreover, since only the private bone is embedded, the judgment of the synostosis in a side-face roentgenography image is easy for the back between the \*\* concerned.

[0013]

[The gestalt which invents] Hereafter, drawing explains the embodiment of this invention. As drawing 1 shows the spacer 1 between artificial \*\* by this operation gestalt (it is hereafter called a spacer for short) and it is shown in drawing, this spacer 1 is forming the \*\*\*\* form by plane view. In addition, the ratio of a major axis l to a minor axis s means the thing of the curve arc configuration which is two or more in a \*\*\*\* form here.

[0014] As an ingredient which constitutes this spacer 1, these may be complexly used for metallic materials, such as super-polymeric materials, such as ceramic ingredients, such as an alumina and a zirconia, and giant-molecule polyethylene, or a titanium mesh block, and a pan. The surface layer which consists of bone compatibility ingredients, such as calcium phosphate system ingredients, such as an apatite, and a collagen, may be especially prepared in a plane of composition with a bone from a viewpoint [ bone ] of fixing, or the above-mentioned titanium mesh block may be arranged in the side which

touches a bone.

[0015] Drawing 2 shows the busy condition of the above-mentioned spacer 1, installs like the above the spacer 1 which forms a \*\*\*\* form by plane view ahead [ between \*\* / J ], and stuffs the private bone T into this tooth space by Kami who secured certainly the tooth space for putting the private bone T into the center section and back between [ J ] \*\*. Thus, a natural intervertebral disk is permuted. Moreover, the spur plate B is used together to the instability by front retroflexion movement, and relative movement of the centrum F in the vertical location between [ J ] the \*\* concerned is restricted.

[0016] Since the \*\*\*\* form was made by plane view, the abbreviation right-and-left full of right and left between \*\* was covered, and one half extent could also cover order width of face, and the spacer 1 of this invention is using together with the private bone T, and has constituted the magnitude and the configuration where the instability (totter etc.) by the laterality of Centrum F is avoidable. Therefore, the synostosis happens immediately and bacterial infection is not generated.

[0017] Furthermore, since the private bone T is embedded, the judgment of the synostosis in a side-face roentgenography image is easy for the back between [ J ] the \*\* concerned so that drawing 2 may also show.

[0018] Next, the above-mentioned spacer 1 has the through tube 4 with sufficient magnitude to open between a top face 2 and inferior surfaces of tongue 3 for free passage, and to be filled up with the private bone of a wafer, and he is trying to strengthen the up-and-down centrum F and the synostosis of the private bone T auxiliary, as shown in drawing 2 (b). In addition, when forming such a through tube 4, if it has sufficient magnitude to be filled up with the private bone T of a wafer as mentioned above, the configuration is arbitrary, although that to which the flat-surface configuration of a through tube 4 carried out the appearance and analog of a spacer 1 is shown in drawing 1. In addition, it is arbitrary whether such a through tube 4 is formed, and it is not cared about.

[0019] Moreover, two or more spikes 5 are formed in vertical each field of the above-mentioned spacer 1, respectively, and it is devised so that a spacer 1 may not carry out a location gap in installation of a spacer 1 and after the operation [ of the private bone T / transplantation ], and an early phase. Considering the truncated square drill configuration where the tip became a taper to the fundus as shown in drawing 3, as nothing and its size, height of 0.5-1mm and die length [ of one side ] of about 1.5-2.5mm of a fundus are suitable for this spike 5.

[0020] In addition, the configurations of the above-mentioned spike 5 may be other configurations in the cone configuration where the tip was rounded off as it is not restricted to a truncated square drill configuration and shown in drawing 4, a pyramid configuration, etc. It is suitable for the size in these cases like the above that height of 0.5-1mm, die length of one side of a fundus or a diameter, a major axis, etc. are about 1.5-2.5mm.

[0021]

[Effect of the Invention] The configuration can be used as a \*\*\*\* form by plane view so that the spacer between artificial \*\* of this invention may be installed ahead between \*\* and it may take large \*\*\*\* of a private bone like the above statement that it should use together with a private bone, the abbreviation right-and-left full of right and left between \*\* can be covered by such configuration, and one half extent can also cover order width of face, and the instability (totter etc.) by the laterality of a centrum can be avoided according to concomitant use with a private bone. Therefore, the synostosis happens immediately and bacterial infection does so the outstanding effectiveness of not generating.

[0022] Furthermore, according to the spacer of this invention, since only a private bone is embedded, the effectiveness that the judgment of the synostosis in a side-face roentgenography image is easy also does the back between the \*\* concerned so.

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DESCRIPTION OF DRAWINGS

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## [Brief Description of the Drawings]

[Drawing 1] The spacer between artificial \*\* by the operation gestall of this invention is shown, (a) is a plan and (b) is a side elevation.

[Drawing 2] The busy condition of the spacer between artificial \*\* of drawing 1 is shown, (a) is the side elevation of an installation part and (b) is an A-A line sectional view.

[Drawing 3] The spike prepared in the spacer between artificial \*\* of drawing 1 is shown, (a) is a plan and (b) is a side elevation.

[Drawing 4] It is the perspective view showing the example of other configurations of a spike of drawing 3 , and the spike of a cone configuration (whose a) rounded off the tip, and (b) are the spikes of a pyramid configuration.

## [Description of Notations]

J Between \*\*

T Private bone

B \*\* \*\* projection plate

F Centrum

s Minor axis

I Major axis

1 Spacer between Artificial \*\*

2 Top Face

3 Inferior Surface of Tongue

4 Through Tube

5 Spike

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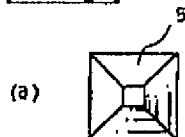
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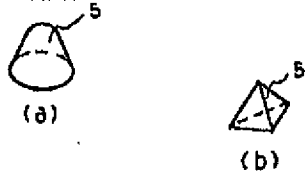
DRAWINGS

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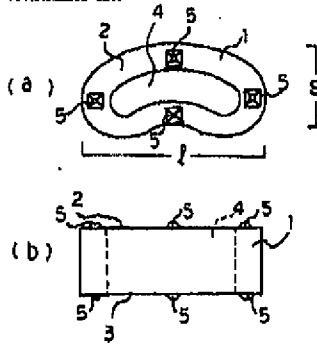
## [Drawing 3]



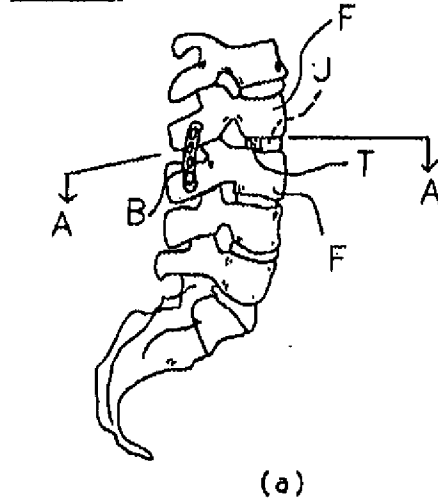
[Drawing 4]



[Drawing 1]



[Drawing 2]



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